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Final Report

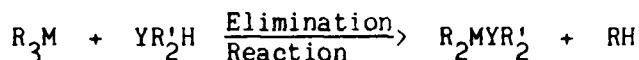
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O. T. Beachley, Jr.  
Department of Chemistry  
State University of New York at Buffalo  
Buffalo, NY 14214

Final Report

During the course of this contract, a greater understanding of the elimination-condensation reaction between group 3 Lewis acids and group 5 Lewis bases having acidic protons was achieved. The results of three kinetic-mechanistic studies reveal that elimination is a second order reaction between the monomeric Lewis acid and the Lewis bases. These two



species must combine with the appropriate orientation and energy for elimination to occur. These kinetic studies suggest that the adduct is NOT the reactive species which undergoes elimination. In order to learn more about the elimination-condensation reaction, a great variety of new group 3 Lewis acids and new compounds of the type  $R_2MYR_2^H$  were prepared and fully characterized.

The second aspect of this contract involved studies of  $R_2MYR_2^H$  as potential amphoteric ligands to transition metals. This research provided the first examples of compounds in which a  $PR_2^H$  moiety served as a bridge between a transition metal and a main-group metal moiety. Compounds of these types have the potential to generate a new type of inorganic polymer. (mgm)

The specific kinetic-mechanistic studies and new compounds developed during the course of this research were defined in the technical reports (published articles) issued during the course of the contract.

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Personnel Who Participated in the Research

1. Claire A. Tessier-Youngs
2. Robert N. Rusinko
3. Randall G. Simmons
4. Shaun Clancy
5. Robert J. Bianchini
6. John P. Kopasz
7. Robert B. Hallock
8. Rein N. Kirss
9. Thomas D. Getman
10. Luis Victoriano
11. Tommie L. Royster
12. Michael A. Banks
13. Ella F. Spiegel
14. John C. Pazik
15. John D. Maloney